

NOTES ON THE CORAL-INHABITING BARNACLES OF THE GREAT BARRIER REEF, AUSTRALIA (CIRRIPEDIA: PYRGOMATIDAE)

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Fixation of the type species for *Arossella* Anderson, 1992, *Darwiniella* Anderson, 1992, and *Trevathana* Anderson, 1992 is by monotypy, and for *Wanella* Anderson, 1993 by subsequent designation. *Wanella andersonorum* sp. nov. is proposed for an Australian species from the Great Barrier Reef previously reported as *Wanella elongatum*. *Neotrevathana* gen. nov. is proposed for *Pyrgoma elongatum* Hiro, 1931 from Honshu Island, Japan. □ *Wanella andersonorum* sp. nov., *Neotrevathana* n. gen., *Pyrgoma elongatum* Hiro, type designations, taxonomy.

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In the landmark study on the functional morphology of coral-inhabiting barnacles found in Australian waters along the Great Barrier Reef (GBR), Anderson (1992: 329) proposed four new taxa: *Rossia*, *Darwiniella*, *Trevathana* and *Newmania*. Unfortunately, the names *Rossia* and *Newmania* were preoccupied and, as replacement names, Anderson (1993: 377) proposed *Arossella* and *Wanella*, respectively. In proposing these, Anderson (1992, 1993) did not follow the general precepts of the 3rd edition of the ICZN (1985). However, three of the taxa fall within 'type by indication' as specified in Article 67b and 68d of the Code, and therefore type designation is type by monotypy. Thus, for *Arossella* the type species is *Pyrgoma projectum* Nillson-Cantell, 1938; for *Darwiniella* the type species is *Pyrgoma conjugatum* Darwin, 1854; and for *Trevathana* the type species is *Pyrgoma dentatum* Darwin, 1854.

When proposing *Newmania* (= *Wanella*), Anderson included two nominal taxa, '*Pyrgoma elongatum*' Hiro, 1931, (= '*Wanella elongatum*') and *Pyrgoma milleporae* Darwin, 1854 (= *Wanella milleporae*). Unfortunately, he did not indicate which one was the type species.

The illustrations and description by Anderson (1992: 321, fig. 31) of '*Wanella elongatum*' from the GBR delimit a species that bears little resemblance to that of *Pyrgoma elongatum* described by Hiro (1931: 154; pl. 14, figs 2-2b) from Seto, Honshu I., Japan. As Anderson (1992: 320) unequivocally noted, this Australian species is clearly allied to, but specifically distinct from, the Philippine species *Pyrgoma milleporae*

Darwin, 1854, and I concur with this assessment. '*Wanella elongatum*' (sensu Anderson, 1992: 321) represents a new species of *Wanella*, which is described below.

One remaining question is the actual systematic position of *Pyrgoma elongatum* Hiro. The original and subsequent descriptions by Hiro (1931: 154; 1935: 19; 1938: 400) and Galkin (1983: 510) emphasise numerous unique attributes, all of which warrant placement of *P. elongatum* in a new taxon related to, but distinct from, *Trevathana* Anderson, 1992.

SYSTEMATICS

Suborder Balanomorpha Pilsbry, 1916
Family Pyrgomatidae Gray, 1825
Subfamily Pyrgomatinae Gray, 1825

Wanella Anderson, 1993¹

Newmania Anderson, 1992: 329 (not *Newmania* Swinhoe, 1892, a lepidopteran).
Wanella Anderson, 1993: 377 (*nomen novum* for *Newmania*).

¹ [Due to an oversight, I inadvertently omitted designating a type species for one of the genera I proposed in my 1993 paper (Anderson, *Zoological Journal of the Linnean Society* 108: 377). I would like to correct this herein. Therefore, I designate *Pyrgoma milleporae* Darwin, 1854 to be the type species of *Wanella* Anderson, 1993. - D. T. Anderson, The University of Sydney, Sydney, N.S.W. 2006, Australia.]

DIAGNOSIS (emended). Wall coalescent, non-tubiferous, low conic to essentially flat, ovate to almost circular in outline; orifice small; inner lamina absent; sheath developing on outer lamina, basal margin ovate; opercular plates separate, limbus occludens, or apical occludent ledge lacking; scutum transversely elongate, making up 2/3 or more of operculum, adductor plate lacking, with small rostral tooth, adductor muscle depression divided into rostral and carinal portions; reduced tergum essentially equilateral to subquadrate, discrete spur and spur tooth lacking; basis calcareous, shallow, cup-shaped.

TYPE SPECIES. *Pyrgoma milleporae* Darwin, 1854. Recent, Mindoro Is, Philippine Is, on what is probably *Millepora platyphylla* Hemprich and Ehrenberg, 1834 (not *Millepora complanata* Lamarck, 1816, see remark below).

REMARKS. As noted above, Anderson assigned two species to *Wanella*, which at the time were included in the genus *Savignium* Leach, 1825 (Ross & Newman, 1973: 159). In the body of the text (Anderson, 1992), the discussion of *milleporae* precedes that of '*elongatum*' (see below). However, in the brief taxonomic section at the end of the paper, their position is reversed (cf. Anderson, 1993). Because there is no clear 'page or line priority' I have asked Prof. Anderson to follow Recommendation 69A of the Code and select the better known, commonly illustrated and more frequently observed (see Boschma, 1948) of the 2 originally included species as the type .

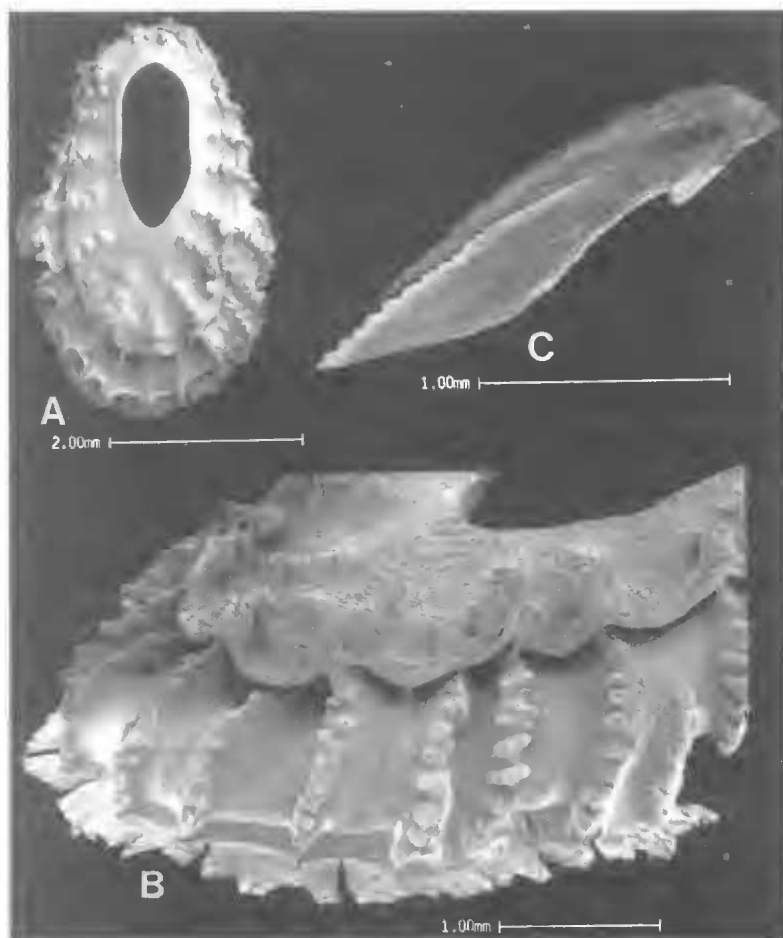


FIG. 1. Scanning electron micrographs of *Neotrevathana elongatum* (Hiro), 1931, Amami O-Shima, Ryukyu Is, approx 28°12'N, 129°30'E, host *Goniastrea aspera* Verrill, 1905, SIO C-9973. A, apical view of wall, rostral end at bottom. B, enlarged view of right rostral end of wall. In this half-grown individual the shallow, narrow pockets below the outer surface of the wall likely contained tissue that inhibits overgrowth by the coral. Regularly spaced black dots along the growth ridges are setal pores that transverse the wall. C, oblique external view of right opercular plate. The simple tergal knob-like projection or spur is visible along the bottom right side of the plate.

Among the unique features found in both species of *Wanella* is subdivision of the scutal adductor into a 'fast and slow' muscle (Anderson, 1992: 320), as well as a reduced orifice, transversely elongated scuta and reduced terga lacking a spur. Also, the oral cone is large and prominent relative to the reduced thorax and maxillipeds.

According to Boschma (1948: 34), *Millepora complanata* Lamarck, 1816, the type host cited by Darwin (1854: 367), ranges throughout the tropical W Atlantic, and is not known to occur in

the Philippine Is or elsewhere in the W Pacific region. Therefore, the type host is likely that cited above.

Wanella andersonorum sp. nov.

Newmania elongatum: Anderson, 1992: 320, fig. 31 (not *Pyrgoma elongatum* Hiro, 1931).

Wanella elongatum: Anderson, 1993: 377.

ETYMOLOGY. The specific epithet, *andersonorum*, honors Prof. D. T. Anderson and his wife, Joanne T. Anderson, whose collective efforts have expanded greatly our knowledge and understanding of the coral-inhabiting barnacles that abound in Australian waters.

DIAGNOSIS. Scutum with pronounced rostral tooth; adductor ridge long, curvilinear; articular margin curvilinear; tergum essentially irregular in outline, basal margin evenly curved.

DESCRIPTION. Wall low-conic, almost circular in outline; sheath about 1/2 height of wall, adpressed, lacking lineations in sheath where tergal spur membrane attaches to wall; adductor muscle depression of scutum large, well defined, divided by slight partition; pit for insertion of lateral depressor muscle well separated from basi-tergal angle; articular ridge of scutum extending well over tergum.

TYPE LOCALITY. John Brewer Reef, GBR, off Townsville, N Queensland, Australia, approx. 19°13'S 146°48'E; J. Carleton and A. Mackley coll.; Aug, 1987; on *Montipora* sp.

REMARKS. The tergal margin of the scutum in *P. milleporae* is straight as is the basal margin of the tergum in contrast to the curvilinear margins found in *W. andersonorum*. The lateral depressor muscle pit in *P. milleporae* is at the basi-tergal angle, but in *W. andersonorum* it is well removed rostrally. Also, the tergum approximates an equilateral triangle in *P. milleporae* whereas it is essentially irregular in outline in *W. andersonorum*. The apertural frill, an elaboration of the tergo-scutal flaps, which appears to inhibit overgrowth by the coral (Anderson, 1992: 292) is brown with a white margin in *P. milleporae*, whereas in *W. andersonorum*, it has '... a white rim, a black wall and distinctive brown-pigmented band in contact with the encroaching coral' (Anderson, 1992: 321), features that further serve to distinguish these two species.

The specimens upon which I base this new species were not accessioned by any institution, and thus are not available. Therefore, in

accordance with Article 74(c) of the Code, I designate the syntype specimen represented by figure 31c of Anderson (1992: 321) as the lectotype.

Neotrevathana gen. nov.

TYPE SPECIES. *Pyrgoma elongatum* Hiro, 1931; Recent, Seto, Honshu I., Japan, 32°58'N 129°39'E; on *Madrepora* sp.

ETYMOLOGY. From Greek, *neo-*, new, and *-Trevathana*, suggesting its relationship and derived phylogenetic position. Gender, neuter.

DIAGNOSIS. Shell coalescent, non-tubiferous, essentially flat, elongate-oval in outline; surface ornamented with widely spaced, low, radiating ridges; orifice large, elongate oval; sheath adpressed, basal margin ovate and saddle-shaped, covering 1/2 or more height of wall; opercular plates coalescent; limbus occludens moderately broad, scutal portion of valve about four times greater than tergal portion; tergal spur reduced or obsolescent; basis calcareous.

REMARKS. *Neotrevathana* differs from *Trevathana* in having broad, low ridges on the shell surface, coalescent opercular plates, a broad occludent ledge (Fig. 1), and by lacking a depression for insertion of the lateral depressor muscle. The tergal spur in *Neotrevathana* is reduced to a knob-like projection, whereas the tergal tooth in *Trevathana* appears to be an elaboration of the tergal spur.

There is no listing for specimens of *Pyrgoma elongatum* Hiro in the catalogue of types in the museum at the Seto Marine Biological Laboratory, Japan (Harada, 1991). According to Harada (in litt., 1994) the type of *P. elongatum* is '... not in the museum and its whereabouts are not known'. A neotype (see Article 75(a) of the Code) should be designated, but the coral fauna in the region of the Seto Marine Biological Laboratory has been seriously affected by pollution and the species may no longer be present there or elsewhere on Honshu I. (Asami & Yamaguchi, 1997: 14), although it is known to occur farther south in the Ryukyu Is (material illustrated in Fig. 1), Hong Kong, Timor Sea and Heron I., Australia (Foster, 1982: 225; Galkin, 1983: 510).

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